

2009 Air Quality Updating and Screening Assessment for *Perth and Kinross Council*

In fulfillment of Part IV of the Environment Act 1995
Local Air Quality Management

Date : 06/2009

Perth & Kinross Council- Scotland

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Executive Summary

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedences are considered likely, the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives

Perth & Kinross Council declared the whole of Perth an AQMA in May 2006 after the Detailed Assessment in 2004 found that there would be areas of exceedences for NO₂ and PM₁₀ where relevant exposure occurred. The 2007 Further Assessment confirmed the conclusions of the Detailed Assessment and recommended that Perth & Kinross Council retain their city wide Air Quality Management Area for NO₂ and PM₁₀ and exceedences of these pollutants are due mainly to queuing and congested traffic specifically HDV traffic. The 2007 and 2008 Progress Reports showed that all sites in Perth which are above or close to the objectives lie within the city centre or close to it on the main through routes and are within the existing AQMA, showing that there is a trend of a slight increase year on year at these sites.

This Updating and Screening Assessment considers the following new monitoring data for calendar year 2008. During 2008, Perth & Kinross Council undertook ambient monitoring of NO₂ tubes at 52 sites within Perth and Kinross.

When assessing the 2008 annual mean nitrogen dioxide concentrations (bias adjusted) against the AQS objective of 40ug/m³, exceedences are evident at 23 of the diffusion tube monitoring sites within AQMA and 2 sites out with the AQMA, both at Crieff.

The exceedences at Crieff are kerb site locations, using the algorithm in TG. (09) the annual mean concentrations were calculated for at the building façade giving results below the annual mean nitrogen dioxide objective. Perth & Kinross Council had decided in January 2009 further monitoring was required at these sites that would be more representative of exposure by relevant receptors, therefore 2 additional diffusions tubes were placed closer to building façades.

The 23 diffusion tube sites that showed exceedences are all sites within Perth & Kinross Council's AQMA and our final Air Quality Action Plan, which is at present within the process of our committee system, addresses these exceedences through the measures to be adopted within the Action Plan. These measures are wide ranging and target those vehicle types identified in the Further Assessment, as well as reducing congestion at peak times within Perth.

There have been no local developments, such as new roads or emission sources, nor have there been any significant changes to existing emission sources, which might have a significant impact on air quality.

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Appendices

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1 Introduction

1.1 Description of Local Authority Area

The Perth & Kinross local authority area is made up of Perthshire and Kinross-shire, collectively the Perth and Kinross area was formerly known as Perthshire. Perth and Kinross is one of the 32 unitary council areas into which Scotland has been divided since 1996. Perth and Kinross is the 5th largest council area in Scotland, but it is only the 14th largest in terms of population, reflecting its extensive rural and upland areas. Important settlements in Perth and Kinross include Perth, Kinross, Auchterarder, Aberfeldy, Blairgowrie, Blair Atholl, Pitlochry, Coupar Angus and Crieff.

The 'Fair City' Perth lies to the east, on the banks of the Tay, the largest river in Britain. Blairgowrie and East Perthshire have quiet glens, peaceful lochs and the mountains of Glenshee.

Known as the 'big county', Perth & Kinross, is the gateway to the Highlands and home to around 140,000 people. The 'big county' refers to not only its physical area, but to the diversity of towns and countryside. Perth and Kinross feature everything you associate with Scotland including lochs, mountains, forests and castles.

Perth and Kinross is bordered on its north by Highland and Aberdeenshire; on its east by Angus and the City of Dundee; and on its south by Fife, Clackmannanshire and Stirling

It covers 5,406 sq km (includes fresh and tidal waters), land area is 5,311 sq km.

Perth is a hub for employment, commerce and tourism for the wider area of Perth and Kinross and this contributes to the traffic issues within our designated Air Quality Management Area. The main and strategic roads within Perth & Kinross include the A90, A9, M90, A85 and A827.

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedences are considered likely, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM in Scotland are set out in the Air Quality (Scotland) Regulations 2000 (Scottish SI 2000 No 97), the Air Quality (Scotland) (Amendment) Regulations 2002 (Scottish SI 2002 No 297), and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

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Table 1.1 Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in Scotland.

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	3.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM₁₀) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2010
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Perth and Kinross Council has completed the following Review and Assessments of air quality to date:

- Stage 1 March 1999, Stage 1 (Revised)
- Stage 2 (September 2002)
- Upgrading and Screening Assessment (2003)
- Detailed Assessment (2004) NO₂ & PM₁₀
- Progress Report (2005)
- Air Quality Management Area Declared (May 2006) for NO₂ & PM₁₀
- Updating and Screening Assessment (2006)
- Progress Report (2007)
- Further Assessment (2007) NO₂ & PM₁₀
- Progress Report (2008)

The previous assessments of the air quality in Perth and Kinross concluded that there were likely exceedances of the annual mean objectives for NO₂ as a result of traffic sources in Perth. Projections also indicated likely exceedances of the annual mean objectives for PM₁₀ in 2010.

Perth & Kinross Council declared the whole of Perth City centre an Air Quality Management Area for both pollutants in May 2006. Figure 1.4 shows the extent of the AQMA. The decision to designate the whole of Perth an AQMA was made to ensure that areas that are close to, but do not at present exceed, the objectives are covered and also it allows the Action Plan to take in a wider area, thus avoiding moving problems to other parts of the city, while dealing with the areas which are exceeding the objectives. It also helped to ensure that the Air Quality Action Plan (AQAP) would be integrated with other council policies.

Perth & Kinross Council has taken account of the effect of the proposed Air Quality Action Plan on greenhouse gas emissions in accordance with Scottish Government guidance. To inform this process, AEA Energy & Environment was commissioned to undertake a study in terms of the effect of the Air Quality Action Plan on greenhouse gas emissions (GHG) for the whole of the Perth & Kinross Council area, rather than just the AQMA, this assessment was completed in May 2007.

The 2007 Progress Report, using 2006 data, concluded that nitrogen dioxide concentrations at 17 sites were breaching the 2005 annual mean objective of 40ug/m³, and at 8 sites were between 35 – 39 ug/m³, all close to Perth city centre, and levels of PM10 at both High Street and Atholl Street monitoring sites appear to be increasing by a small margin year on year.

The 2008 further assessment confirmed the conclusions of the 2007 detailed assessment and to test the city centre traffic management (CCTMR) scenarios to assess the likely impact they may have on pollutant concentrations. The report included an assessment of source apportionment and identified emissions from heavy duty vehicle and congested traffic as the main local contributors to elevated levels of nitrogen dioxide and PM₁₀ in Perth.

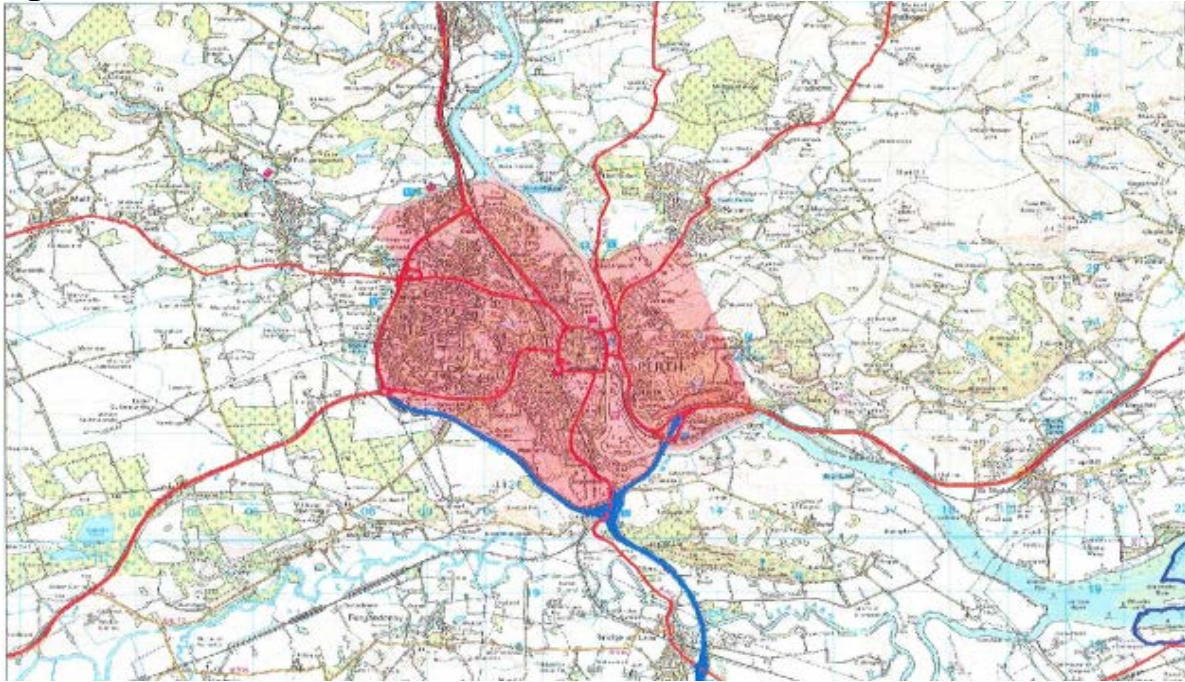
The 2008 Progress Report, using 2007 data, concluded that nitrogen dioxide concentrations at 19 sites in Perth are above the annual mean objective of 40ug/m³ and 4 are between 35-40ug/m³. Also in Crieff, 1 site is now above 40ug/m³ and 2 sites are between 35 – 40 ug/m³.

Draft Air Quality Action Plan, Strategic Environmental Assessment Environmental Report (2008), Climate Change Implication of the Draft Air Quality Action Plan (2008) and the Further Assessment (2008) all documents went out for consultation June (2008).

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The steering group has now revised the Air Quality Action Plan, taking into account the cumulative impacts of the measures in the plan. The final version of the plan is in the process of being forwarded for approval to the Council's elected members; allowing it to become official Council policy. In addition the draft final action plan has been submitted to Steering Group for on-going comments. It is anticipated that the plan will be approved by the Scottish Government in the summer of 2009. However Perth & Kinross Council intends to commence with some of the actions.

Figure 1.4 Perth AQMA



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Perth & Kinross Council has an on going commitment to quality assurance and quality control, and accordingly ensures that all measurements fully comply with relevant guidance.

Two automated monitoring stations within Perth provide air quality data. Each site samples and records the continuous, real-time concentrations of nitrogen dioxide and small particulate matter with an API M200A chemiluminescent analyser for Oxides of Nitrogen and an R&P TEOM analyser for PM₁₀. Site details for, and current real time data from, these monitors are available in the Scottish Air Quality Website.

All automatic monitoring data has been collected, ratified and supplied to the Council by AEA Energy & Environment (AEA). AEA ensure monitoring instrumentation, methodologies and data conform to consistent and traceable national and international standards. This includes full measurements traceability through the use of UKAS – accredited calibration gases.

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location ?
Perth1-High Street	Roadside	311700 723516	NO ₂	Y	Y (20.4m)	4.8m	Y
Perth 2-Atholl Street	Roadside	311575 723917	NO ₂	Y	Y (22.3m)	2.3m	Y

2.1.2 Non-Automatic Monitoring

Perth & Kinross Council also maintains a network of passive diffusion tubes to monitor levels of nitrogen dioxides. The vast majority of these 52 sites are in Perth, although there are also 2 sites in Glencarse (just off the A90 Perth to Dundee), 4 sites in Crieff and 2 sites in Aberfeldy. A list of site details is provided in Table 2.2 and site location maps are provided in Figure 2.2, of this report.

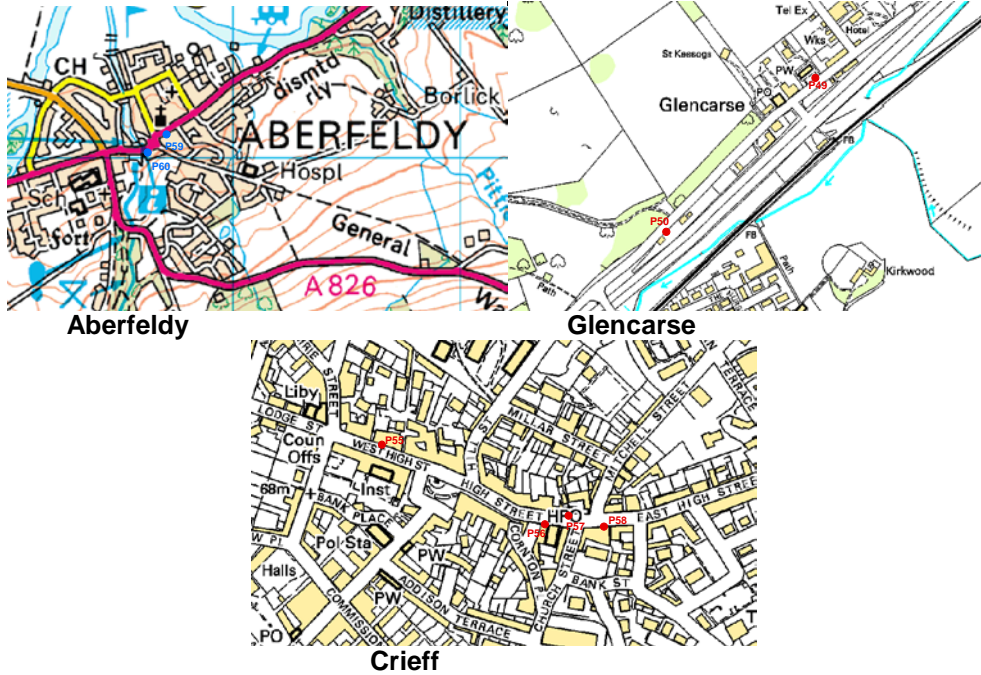
Dundee City Council Scientific Services provide and analyse passive diffusion tubes for monitoring NO₂ in Perth & Kinross. This laboratory takes part in and meets QA/QC Field Intercomparison standards specified for the National NO₂ Network. The Summary of Precision Results for Nitrogen Dioxide Diffusion Tubes Collocation Studies, by Laboratory which is published on the review and assessment helpdesk operated by Air Quality Consultants/University of the West of England classes precision for Dundee CCSS to be "good". Tube preparation utilises a 20% v/v triethanolamine (TEA) in water methodology. Analysis using colorimetric techniques typically follows four/five week exposure period in accordance with the National NO₂ Monitoring Network schedule.

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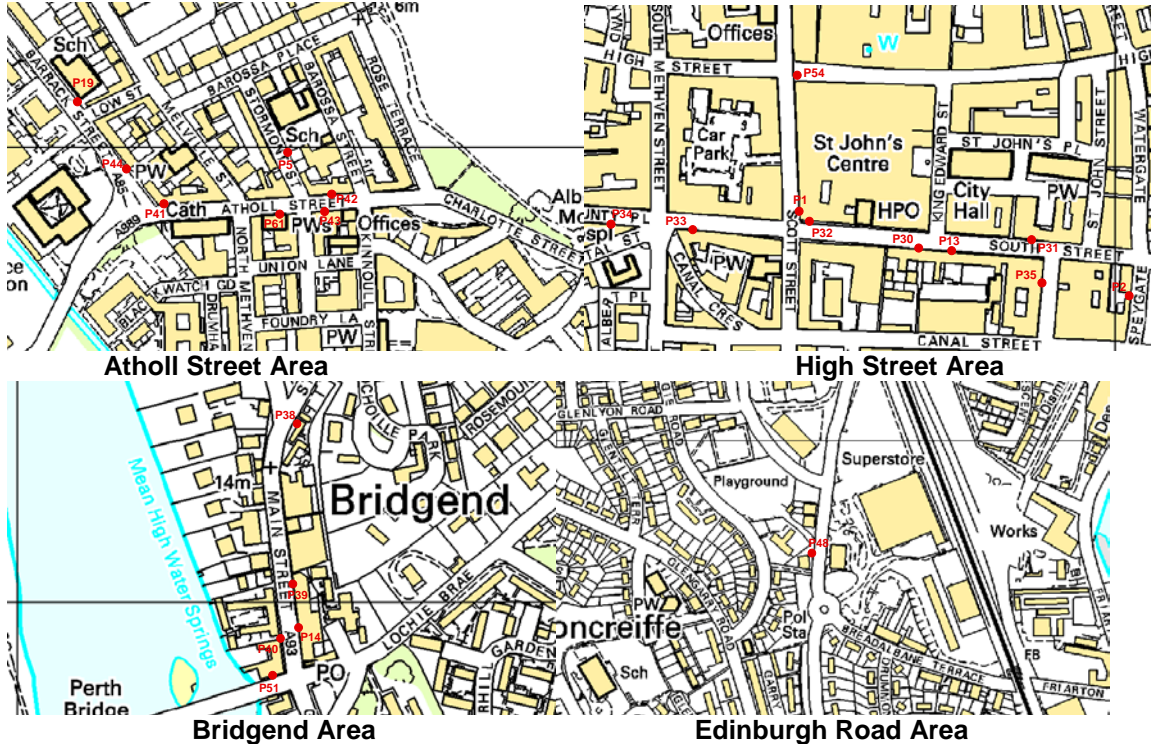
The statistical tool created by AEA Energy & Environment and provided for LAQM assistance on the UK National Air Quality Archive website was used to confirm good precision and accuracy of data from co-located tubes in Perth & Kinross.

Figure2.2

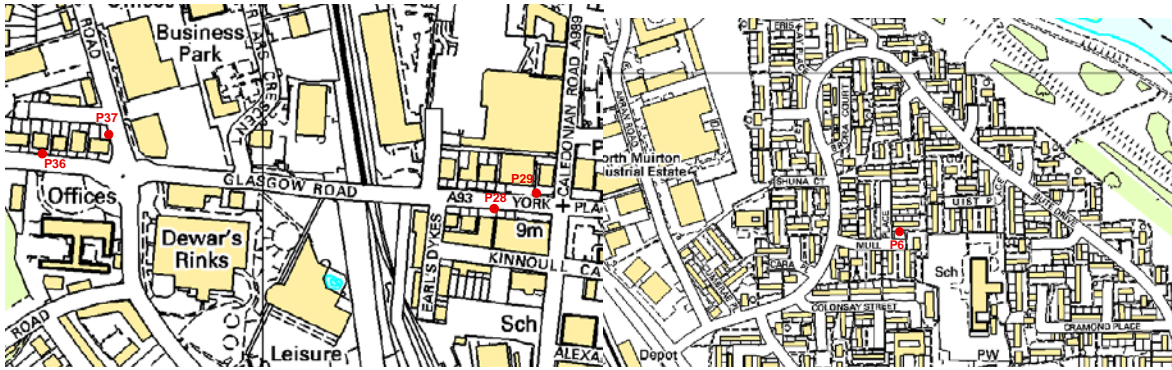
Diffusion tube locations out with AQMA



Diffusion Tube Location within AQMA

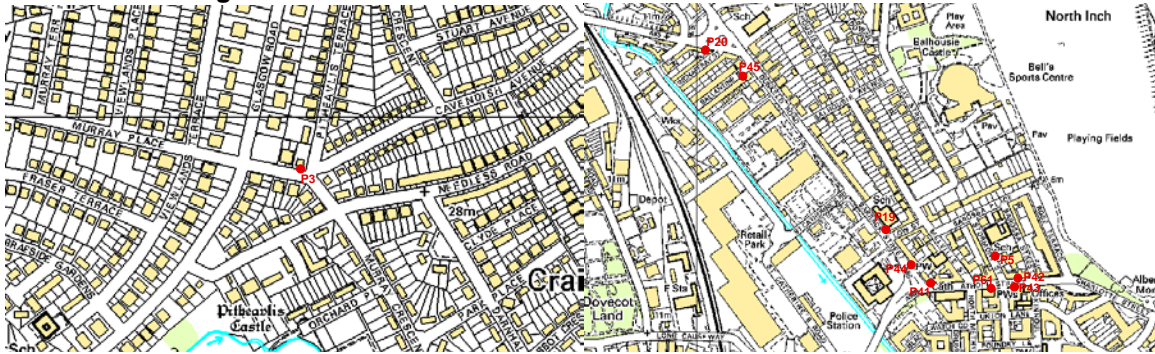


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Lower Glasgow Road Area

Muirton Area



Murray Crescent

North Centre Perth



NW Perth Area

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Table 2.2 Details of Non- Automatic Monitoring Sites

	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
42 Scott St, Perth, PH1 5PH	R	NO117235	NO2	Y	Y(3)	2.5	Y
17 Speygate, Perth, PH2 8PJ	UC	NO120234	NO2	Y	Y(2.9)	2.05	Y
15 Murray Crescent, Perth, PH2 0HU	UB	NO105228	NO2	Y	Y(2.9)	2.05	N
8 Stormont Street, Perth, PH1 5NW	UC	NO116239	NO2	Y	Y(10)	1.7	Y
41 Mull Place, Perth, PH1 3DP	UB	NO105257	NO2	Y	Y(6)	1.7	N
257 Rannoch Rd/ Newhouse Rd Roundabout, Perth, PH1 2DW	UC	NO089244	NO2	Y	Y(8.3)	2.1	Y
86/88 South Street, Perth, PH2 8PD	R	NO118234	NO2	Y	Y(1)	2.6	Y
9 Main Street, Bridgend, Perth, PH2 7HD	R	NO122239	NO2	Y	Y(1)	2.3	Y
St Ninian's School, Dunkeld Rd, Perth, PH1 5RF	R	NO113241	NO2	Y	Y(3.4)	3.2	Y
2 Crieff Road, Perth, PH1 5RT	R	NO110243	NO2	Y	Y(1)	1.9	Y
28 York Place, Perth, PH2 8EH	R	NO111234	NO2	Y	Y(12)	2.4	Y
37 York Place, Perth, PH2 8EH	R	NO112235	NO2	Y	Y(8)	4.1	Y
104 South Street, Perth, PH2 8PA	R	NO117234	NO2	Y	Y(1)	2.4	Y
45-47 South Street, Perth, PH2 8PD	R	NO119234	NO2	Y	Y(5)	3.5	Y

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55 East Huntingtower, Perth, PH1 8PA	R	NO083234	NO2	Y	Y(25)	4.8	Y
20 Edinburgh Road, Perth, PH2 8RX	R	NO083234	NO2	Y	N(5)	2.5	Y
20 West Bridge Street, Perth, PH2 7EA	R	NO128239	NO2	Y	Y(25)	3.7	Y
Real Time Monitor 17 Dundee Street, Perth, PH1 5EW	R	NO115239	NO2	Y	Y(20.5)	4.8	Y
Real Time Monitor, 21 Glasgow Road, Perth, PH1 5NF	R	NO107235	NO2	Y	Y(22.2)	2.6	Y
40 Os Road, Perth, PH2 7BA	R	NO108230	NO2	Y	Y(11)	1.3	Y
93-109 Main Street, 30 Dundee Road, Bridgend, Perth, PH2 7HE	R	NO122242	NO2	Y	Y(113)	174	Y
39 Main Street, The Lodge, Isla Road Bridgend, Perth, PH2 7HD	R	NO122240	NO2	Y	Y(7)	2.4	Y
18 Main Street, 5-7 Charlotte Street, Bridgend, Perth, PH2 7HB	R	NO122238	NO2	Y	Y(3.8)	224	Y
76 Atholl Street, Perth, PH1 5NH	R	NO114239	NO2	Y	Y(1)	2.5	Y
26 Atholl Street, Perth, PH1 6NP	R	NO116239	NO2	Y	Y(25)	0.8	Y
United Free Church of Scotland, Kinoull Street Perth PH1 5EZ	R	NO116239	NO2	Y	Y(2)	236	Y
Leith Buildings, 28 28 Barrack Street, Dunkeld Road, Perth, PH1 5AJ	R	NO110239	NO2	Y	Y(2.7)	0.3	Y
Ballinlone Park Road, Perth PH1 5AS	UC	NO100243	NO2	Y	Y(74)	1.3	Y
20 Cairn Road, Perth, PH1 2PE	R	NO093248	NO2	Y	Y(11.5)	224	Y

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Opp Wood'n Garden, Glencarse, PH2 7XL	R	NO173235	NO2	N	Y(2.8)	2.8	Y
Linden Garden Centre, Glencarse, PH2 7LX	R	NO173235	NO2	N	Y(6)	2.1	Y
7 West High Street, Crieff PH7 3AF	UC	NN866215	NO2	N	Y(10)	0.4	N
39, High Street, Crieff PH7 3HT	UC	NN865215	NO2	N	Y(18)	1.2	N
The Highland Trading Company, 62, High Street, Crieff PH7 3BS	UC	NN865215	NO2	N	Y(1)	1	Y
9 East High Street, Crieff PH7 3AF	UC	NN866215	NO2	N	Y(5)	0.3	Y
12 Dunkeld Street, Aberfeldy PH15 2DA	UC	NN857491	NO2	N	Y(1)	2.3	Y
Highland Gift Shop, Bridgend, Aberfeldy PH15 2DF	UC	NN856490	NO2	N	Y(1.5)	2.3	Y

Key to monitoring site Types

K Kerbside
 O Other
 R Roadside
 UB Urban Background
 UC Urban Centre

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

Table 2.3a Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective

Location	Within AQMA?	Proportion of year with valid data 2008 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$) 2008
High St	Y	95.6	27
Atholl St	Y	97.5	60

* *Optional*

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Table 2.3b Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Location	Within AQMA?	Data Capture 2008 %	Number of Exceedences of hourly mean (200 µg/m ³) <i>If the period of valid data is less than 90% of a full year, include the 99.8th %ile of hourly means in brackets.</i>
			2008 *
High St	Y	95.6	1
Atholl St	Y	97.5	25

* Optional

Diffusion Tube Monitoring Data

The annual mean concentrations for NO₂ diffusion tube (bias adjusted) are presented in Table 2.4a. Monthly breakdowns are included in Appendix B.

Table 2.4a Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA ?	Data Capture 2008 %	Annual mean concentrations 2008 (mg/m ³) Adjusted for bias ⁽¹⁾
1	42 Scott St,	Y	100	48
2	17 Speygate,	Y	100	28
3	15 Murray Cres,	Y	100	21
5	8 Stormont St,	Y	100	27
6	41 Mull Place,	Y	100	15
7	257 Rannoch Rd/	Y	100	22
13	86/88 South Street	Y	100	43
14	9 Main St, Bridgend,	Y	97	47
19	St Ninian's School ,Dunkeld Rd,	Y	100	39
20	2 Crieff Road	Y	100	33
28	28 York Place	Y	100	51
29	37 York Place	Y	100	46
30	104 South St,	Y	100	45
31	45-47 South St,	Y	100	38
32	135 South St,	Y	100	45
33	216 South Street	Y	100	46
34	10 County Place,	Y	100	54
35	17 Princes St	Y	100	33
36	51 Glasgow Rd,	Y	100	40
37	Riggs Rd, Perth,	Y	92	35
38	93-109 Main St Bridgend,	Y	100	36
39	39 Main St, Bridgend,	Y	100	58
40	18 Main St, Bridgend,	Y	100	53
41	76 Atholl St,	Y	100	62
42	26-28 Atholl St,	Y	100	54
43	17 Atholl St,	Y	100	60

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Site ID	Location	Within AQMA ?	Data Capture 2008 %	Annual mean concentrations 2008 (mg/m3) Adjusted for bias ⁽¹⁾
44	22 Barrack St	Y	96	51
45	Ballantine Place,	Y	100	27
46	204 A Crieff Rd	Y	100	35
47	5 East Huntingtower,	N	100	31
48	30 Edinburgh Rd	Y	92	29
51	2 West Bridge St, Bridgend	Y	100	34
54	RTM 176 High St	Y	100	31
61	RTM Atholl St	Y	100	60
62	84 Dundee Rd	Y	100	41
63	30 Dundee Rd,	Y	100	48
64	The Lodge, Isla Rd, Bridgend	Y	100	55
65	5-7 Charlotte Street	Y	92	35
67	1 Atholl Street	Y	100	45
68	2 Atholl Street	Y	100	36
69	Church of Scotland, Kinnoull Street	Y	100	48
70	Leith Buildings, 28 Dunkeld Rd	Y	100	36
71	134-140 Dunkeld Road	Y	100	20
72	82 Crieff Road,	Y	100	43

¹Bias adjustment factor 1.03 used (see Appendix A)

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Table 2.4b Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA ?	Data Capture 2008 %	Annual mean concentrations 2008 ($\mu\text{g}/\text{m}^3$) Adjusted for bias ⁽²⁾
49	Opp Wood'n Garden, Glencarse,	N	100	28
50	Linden Garden Centre, Glencarse	N	100	27
55	7 West High st, Crieff	N	92	50
56	39, High St, Crieff	N	92	39
57	62, High St, Crieff	N	92	37
58	9 East High St, Crieff av	N	92	44
59	12 Dunkeld Street, Aberfeldy	N	100	30
60	Highland Gift Shop, Bridgend, Aberfeldy	N	100	20

²Bias adjustment factor 1.03 used (see Appendix A)

* *Optional*

2.2.2 PM₁₀

Measurements in Perth and Kinross are made at 2 sites using TEOM automatic particulate analysers. It has been recognised that the routine practice in the UK for a default correction factor of 1.3 that has currently applied to TEOM data will still not be equivalent to the EU reference method for PM₁₀ monitoring. Therefore the Volatile Correction Model (VCM) will be applied to TEOM PM₁₀ data, as in line with Consultation Document LAQM.TG (09).

Table 2.5a Results of PM₁₀ Automatic Monitoring: Comparison with Annual Mean Objective

Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)	
			2008	2010 ⁺
High St	Y	96.7	15.4	15.0
Atholl St	Y	98.4	19.7	18.0

+ Predicted from 2008 data using the methodology in Box 2.1 of LAQM.TG (09).

Table 2.5b Results of PM₁₀ Automatic Monitoring: Comparison with 24-hour Mean Objective

Location	Within AQMA?	Data Capture 2008 %	Number of Exceedences of daily mean ($50 \mu\text{g}/\text{m}^3$) <i>If data capture < 90%, include the 90th %ile of hourly means in brackets.</i>	
			2008	2010 ⁺
High St	Y	96.7	0	0
Atholl St	Y	98.4	2	1

+ 2010 annual mean estimated from 2008 data using the methodology in LAQM.TG (09)

2.2.3 Other Pollutants Monitored

Perth & Kinross Council currently does not monitor for 1, 3-butadiene, benzene, carbon monoxide, lead and sulphur dioxide. Based upon the findings of the previous assessments, the concentrations of these pollutants are unlikely to be in excess of the air quality objectives.

3. Road Traffic Sources

3.1. Narrow Congested Streets with Residential Properties Close to the Kerb

Perth & Kinross Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.2. Busy Streets Where People May Spend 1-hour or More Close to Traffic

Perth & Kinross Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.3. Roads with a High Flow of Buses and/or HGVs.

Perth & Kinross Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.4. Junctions and Busy Roads

Perth & Kinross Council confirms that there are no new/newly identified busy junctions/busy roads.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.5. New Roads Constructed or Proposed Since the Last Round of Review and Assessment

Perth & Kinross Council confirms that there are no new/proposed roads.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.6. Roads with Significantly Changed Traffic Flows

Perth & Kinross Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.7. Bus and Coach Stations

Perth's bus station located at Leonard Street Perth has a daily bus movement of less than 2.500 per day, the bus movements are Mon – Fri 178 per day, Sat 158 per day and Sun 77 per day.

Perth & Kinross Council confirms that there are no relevant bus stations in the Local Authority area.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

4. Other Transport Sources

4.1. Airports

There are no airports in Perth and Kinross that have a throughput of 10 mppa.

Perth & Kinross Council confirms that there are no airports in the Local Authority area.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

4.2. Railways (Diesel and Steam Trains)

4.2.1. Stationary Trains

No locations were identified within Perth and Kinross Council area where locomotives are stationary for prolonged periods and where members of the public would be exposed

Perth & Kinross Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

4.2.2. Moving Trains

Start writing supporting text here...

Perth & Kinross Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

4.3. Ports (Shipping)

In 2008 Perth Harbour had 96 vessels call at Perth giving 192 river transits

Perth & Kinross Council confirms that there are no ports or shipping that meets the specified criteria within the Local Authority area.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5. Industrial Sources

5.1. Industrial Installations

5.1.1. New or Proposed Installations for which an Air Quality Assessment has been carried Out

Perth and Kinross council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.1.2. Existing Installations where Emissions have increased Substantially or New Relevant Exposure has been Introduced

Planning permission was granted in 2008 for a change of use to enable the additional use of site, before approval the process was the drying of grass for hay or pelletized into animal feed. The additional use was to incorporate a further process of drying sawdust and the manufacture of wood fuel pellets at South Cassochie Farm, Methven, Perth. The Air Quality Assessment was commissioned by BMT Cordah, dated 7 January 2009 and modelling, using ADMS 4 model, was undertaken for NO₂, CO, SO₂ and PM₁₀.

Perth and Kinross council has assessed industrial installations with <substantially increased emissions> <new relevant exposure in their vicinity>, and concluded that it will not be necessary to proceed to a Detailed Assessment.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.1.3. New or Significantly Changed Installations with No Previous Air Quality Assessment

During 2008 two new permits were issued for Part B installations. These were a Dry Cleaner and Plant Hire company. Shore recycling fridge/freezer plant which was a Part B process is now required to be a Part A due to the increased throughput, it is currently being determined. Appendix C gives a comprehensive list of Pollution Prevention & Control sites registered with Perth & Kinross Council's Area.

Perth & Kinross Council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.2. Major Fuel (Petrol) Storage Depots

Delete whichever is not applicable:

There are no major fuel (petrol) storage depots within Perth & Kinross Council area.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.3. Petrol Stations

Perth & Kinross Council has a number of petrol stations which are authorised Part B processes, see Appendix C; only two are on busy roads of more than 30,000 vehicles per day; however there are no relevant receptors within 10m of the pump. There are also no petrol stations where throughput has increased, to exceed the threshold, since the 2008 progress report.

Perth & Kinross Council confirms that there are no petrol stations meeting the specified criteria.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.4. Poultry Farms

A list of poultry producers in Perth & Kinross is displayed in Appendix C . All poultry producers within Perth & Kinross Council are registered under the Integrated Pollution Prevention and Control (IPPC) regime but all are below the threshold of 400,000 birds if mechanically ventilated and 200,000 birds if naturally ventilated.

Perth & Kinross Council confirms that there are no poultry farms meeting the specified criteria.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

6. Commercial and Domestic Sources

6.1. Biomass Combustion – Individual Installations

Planning permission was granted in 2007 for the installation of dual biomass boilers providing 600kW output within Scottish and Southern Energy training facility, Dunkeld Road, Perth. Stack height 23.73m and stack diameter 0.28m. At planning consultation stage the Pollution Control Section requested an Air Quality Impact Assessment; an initial assessment was submitted in 2007 and then subsequent to the publication of this report, change to the design of the facility (Stage D) required reassessment. Methodology used was dispersion model ADMS (v4) and considered the impact on ambient concentrations of emissions of particulate matter and nitrogen oxide. Background concentrations were projected using the 2006 data factors obtained from the National Air Quality Archive

Perth and Kinross council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

6.2. Biomass Combustion – Combined Impacts

Planning permission was granted in 2008 for the installation of 2 biomass boilers each with individual flues at Fortingall Hotel, Fortingall, Aberfeldy. Thermal Capacity of each boiler was 60kW. Background concentration for PM₁₀ was obtained from National Maps 2005 from the Air Quality Archives**

Perth & Kinross Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

6.3. Domestic Solid-Fuel Burning

Start writing supporting text here...

Perth & Kinross Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

7.Fugitive or Uncontrolled Sources

Perth and Kinross council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

8. Conclusions and Proposed Actions

8.1. Conclusions from New Monitoring Data

From data captured within the AQMA, for NO₂, 19 sites have been identified as not meeting the annual objective. As stated in 2008s Progress report there is a year on year increase at these sites and this USA has confirmed this trend within our declared AQMA. The 2004 detailed assessment and the 2007 Further Assessment carried out by Perth & Kinross Council confirmed that emissions from heavy duty and congested traffic was the main contributors to elevated levels of nitrogen dioxide and PM10 in Perth. The data captured for PM 10s shows that at Atholl Street the annual mean concentration was in exceedance 19.7 ug/m³. There has been no significant changes identified in this USA with regards to traffic sources within the AQMA, therefore the Council concludes that the AQAP, which is at present within the Councils committee system for approval, will address the issues of HGV and congestion through the measures of the plan. Perth & Kinross Council has already started to implement some of the measures within our draft plan. Through funding received from a Scottish Government grant for 2009/10.

Diffusion tube monitoring in Crieff has identified two exceedances at 7 West High Street and 9 East High Street with annual average nitrogen dioxide concentrations of 50ug/m³ and 44ug/m³ respectively. These are both kerbside sites, which should not apply to the Annual Mean Objective. The annual mean concentration was calculated at the building façade using the algorithm given in Technical Guidance LAQM.TG (09). This was done by using the calculator found at <http://www.airquality.co.uk/laqm/tools/NO2withDistancefromRoadsCalculatorIssue2.xls> which gave results of 36.5µg/m³ and 34.4µg/m³ which is below the annual mean nitrogen dioxide objective. Although this represents a worst case scenario due to the conservative bias adjustment factor used, it is still approaching the annual mean nitrogen dioxide objective.

8.2. Proposed Actions

Perth & Kinross Council predicted that the calculated levels at 9 East High Street Crieff and 7 West High Street Crieff would be approaching the annual mean nitrogen dioxide objectives, therefore further monitoring was proposed in January 2009. Two additional diffusion tubes were placed closer to the building facades to be more representative of exposure by relevant receptors, at 19 West Street Crieff PH7 4AU and 43 High Street Crieff PH7 3HT. Therefore Perth & Kinross Council concludes that it is not necessary to proceed to a Detailed Assessment at this time.

9. References

Part IV of the Environment Act 1995. Local Air Quality Management. Technical Guidance LAQM.TG (03) January 2003.

The Air Quality Regulations (2000) and The Air Quality (Scotland) Amendment Regulations 2002.

Department for Environment, Food and Rural Affairs, Air Quality Strategy for England, Scotland Wales and Northern Ireland, 2007

Department for Environment, Food and Rural Affairs, (2009) Local Air Quality Management Technical Guidance LAQM.TG (09).

Spreadsheet of Bias Adjustment Factors accessed at www.uwe.ac.uk/aqm/review.

UK National Air Quality Information Archive, accessed at www.airquality.co.uk,

Air Quality Detailed Assessment. 2004, AEA Technology plc, Report AEAT/ENV/R1708 Issue 1

Air Quality Updating and Screening Assessment. 2006, AEA Technology plc Report AEAT/ENV/R2256 issue 2.

Further Assessment of Air Quality. 2007 AEA Technology plc Report AEA/ED49360001 issue 1

Perth & Kinross Council Progress Report 2007 & 2008

AEA (on behalf of Defra and the Devolved Administrators), WASP – Annual Performance Criteria for NO₂ Diffusion Tubes used in Local Air Quality Management (LAQM), 2008 onwards, and Summary of Laboratory Performance in Rounds 97 – 101 (<http://www.laqmsupport.org.uk>), November 2008

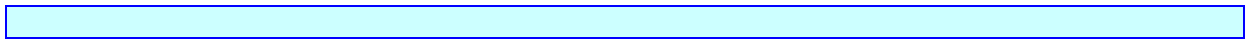
AEA (on behalf of Defra and the Devolved Administrators), WASP – Annual Performance Criteria for NO₂ Diffusion Tubes used in Local Air Quality Management (LAQM), 2008 onwards, and Summary of Laboratory Performance in Rounds 98 – 102 (<http://www.laqmsupport.org.uk>), February 2009

Appendices

Appendix A: QA/QC Data

Appendix B: Monthly Diffusion Tube Results

Appendix C: Pollution Prevention & Control Public Register



Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

Diffusion tube monitoring has been undertaken at 44 locations within the Perth AQMA, and at 8 further locations within the Perth and Kinross Council area. The tubes are analysed by Dundee Scientific Services using a 20% TEA in water preparation method. Data capture at all of the sites was high, with at least ten months data at all sites..

Factor from Local Co-location Studies (if available)

Collocation studies have been carried out at both of the automatic monitors in Perth, where diffusion tubes have been exposed in triplicate and the measured concentrations compared with the monthly results from the automatic monitor. The precision and accuracy tool found at <http://www.airquality.co.uk/laqm/tools> was used to determine bias factors for each of the automatic monitors. The results are presented below

Atholl Street Bias

Checking Precision and Accuracy of Triplicate Tubes



Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	04/01/2008	29/01/2008	69.6	73.6	68.5	71	2.7	4	6.7
2	29/01/2008	26/02/2008	68.8	67.8	58	65	6.0	9	14.8
3	26/02/2008	01/04/2008	58.1	59.2	52.3	57	3.7	7	9.2
4	01/04/2008	29/04/2008	47	54.3	53.6	52	4.0	8	10.0
5	29/04/2008	27/05/2008	57.4	54.3	57.1	56	1.7	3	4.2
6	27/05/2008	01/07/2008	62.3	62.9	64.7	63	1.2	2	3.1
7	01/04/2008	29/07/2008	25	53.8	52.1	44	16.2	37	40.1
8	29/07/2008	02/09/2008	54.1	61.2	59.1	58	3.6	6	9.1
9	02/09/2008	30/09/2008	56.7	53.2	61.4	57	4.1	7	10.2
10	30/09/2008	28/10/2008	57.8	60.5	60.8	60	1.7	3	4.1
11	28/10/2008	02/12/2008	60.5	61.4	60.5	61	0.5	1	1.3
12	02/12/2008	06/01/2008	61	58.3	55.7	58	2.7	5	6.6
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (%) DC)	Tubes Precision Check	Automatic Monitor Data Capture
68	77	Good	Good
76	97	Good	Good
53	100	Good	Good
53	100	Good	Good
52	100	Good	Good
53	100	Good	Good
46	100	Poor Precision	Good
55	100	Good	Good
62	98	Good	Good
61	100	Good	Good
66	100	Good	Good
76	100	Good	Good

Overall survey --> **Good precision** **Good Overall DC**

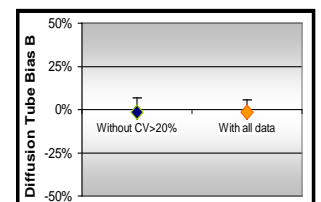
Site Name/ ID:	Atholl Street
----------------	---------------

Precision 11 out of 12 periods have a CV smaller than 20%

(Check average CV & DC from Accuracy calculations)

Accuracy (with 95% confidence interval)	
without periods with CV larger than 20%	
Bias calculated using 11 periods of data	
Bias factor A	1.03 (0.95 - 1.12)
Bias B	3% (-11% - 5%)
Diffusion Tubes Mean:	60 μgm^{-3}
Mean CV (Precision):	5
Automatic Mean:	61 μgm^{-3}
Data Capture for periods used:	97%
Adjusted Tubes Mean:	62 (57 - 67) μgm^{-3}

Accuracy (with 95% confidence interval)	
WITH ALL DATA	
Bias calculated using 12 periods of data	
Bias factor A	1.03 (0.96 - 1.11)
Bias B	-3% (-10% - 5%)
Diffusion Tubes Mean:	58 μgm^{-3}
Mean CV (Precision):	8
Automatic Mean:	60 μgm^{-3}
Data Capture for periods used:	98%
Adjusted Tubes Mean:	60 (56 - 65) μgm^{-3}



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Version 03 - November 2006

High Street Bias

Site	Site Type	Annual Mean	Period Mean	Ratio
			Average	

QA/QC of automatic monitoring



QA/QC of diffusion tube monitoring



The Workplace Analysis Scheme for Proficiency (WASP) is an independent analytical performance testing scheme, operated by the Health and Safety Laboratory (HSL). WASP formed a key part of the former UK NO₂ Network's QA/QC, and remains an important QA/QC exercise for laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM). The laboratory participants analyse four spiked tubes, and report the results to HSL. HSL assign a performance score to each laboratory's result, based on their deviation from the known mass of nitrite in the analyte.

The outcomes of these QA/QC schemes are evaluated on a regular basis against a set of pre-defined performance criteria. The Performance criteria are due to be changed, *at present* the criteria are based on the z-score method, however from April 2009; the criteria will be based upon the Rolling Performance Index (RPI) statistic.

Dundee Scientific Services takes part in this scheme and in each of the rounds: 97-100 (Apr 2007-Apr2008); 98-102 (Jul 2007-Jul 2008); 99-103 (Oct 2007-Oct 2008) and 100-104 (Jan 2008-Jan 2009) were scored as good.

Duplicate and Triplicate Tubes

In order to measure precision within the area, Perth and Kinross Council have exposed diffusion tubes at 14 sites other than the High St and Atholl St real time monitors.

- Precision was measured using the spreadsheet found at: <http://www.airquality.co.uk/laqm/tools.php> . All the duplicate and triplicate tubes were found to have good precision.

Appendix B: Diffusion Tube Results

Diffusion Tube Raw Data

Perth Nitrogen Dioxide Diffusion Tube Results ($\mu\text{g}\text{m}^{-3}$)

Site	Address	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08
P1 L	42 Scott St, Perth,	56.4	45.2	37.5	37.2	61.5	40.4	47.0	48.4	45.2	41.9	48.2	50.2
P1 C	42 Scott St, Perth	54.9	46.8	47.0	54.4	59.7	41.8	40.5	46.1	47.7	36.4	48.5	36.4
P1 R	42 Scott St, Perth	56.1	47.3	37.4	40.9	60.4	40.8	48.1	46.4	47.5	34.6	47.8	48.0
P2	17 Speygate, Perth	34.9	36.0	25.5	24.6	20.4	18.9	19.7	22.7	25.0	26.0	35.6	37.6
P3L	15 Murray Cres, Perth	30.1	29.3	16.5	15.4	14.0	15.9	13.2	16.9	19.7	18.5	27.6	36.3
P3 R	15 Murray Cres, Perth	31.5	27.5	17.5	16.2	15.2	15.4	13.2	16.2	18.4	16.8	23.4	33.3
P5 L	8 Stormont St, Perth,	39.7	38.9	23.5	20.5	14.5	22.1	18.6	20.9	24.7	30.0	33.0	37.5
P5 R	8 Stormont St, Perth	35.0	35.0	23.5	18.2	15.8	21.4	17.7	20.6	24.6	25.1	32.8	35.3
P6	41 Mull Place, Perth	26.0	19.2	12.2	10.0	7.2	9.3	7.0	10.1	12.5	14.0	20.4	24.7
P7	257 Rannoch Rd/, Perth	30.0	23.0	12.9	20.6	20.5	16.0	16.1	22.3	21.4	17.2	27.0	31.1
P13 L	86/88 South Street Perth	54.4	45.7	39.2	40.0	34.3	41.3	33.9	39.5	39.7	45.0	43.1	47.0
P13 R	86/88 South Street Perth	52.6	51.5	41.9	38.7	35.5	39.4	36.8	37.2	37.1	42.3	43.8	46.3
P14 L	9 Main St, Bridgend, Perth	49.6	42.0	35.7		66.0	43.0	47.2	50.1	46.1	35.2	40.4	42.1
P14 C	9 Main St, Bridgend, Perth	47.3	41.6	36.7	53.8	64.1	43.5	48.4	50.1	53.3	36.1	45.1	44.9

Perth & Kinross Council- Scotland

P14 R	9 Main St, Bridgend, Perth	47.8	45.5	39.3	52.4	62.0	45.0	29.1	47.7	48.3	33.2	44.5	43.0
P19	St Ninian's ,Dunkeld Rd, Perth,	50.1	45.5	29.5	37.3	28.2	36.1	25.4	35.3	38.1	40.2	47.4	43.8
P20	2 Crieff Road Perth	43.5	39.0	25.0	32.2	31.4	28.1	26.7	29.1	29.5	26.8	37.7	39.2
P28	28 York Place Perth	59.7	56.2	37.3	49.5	57.4	45.6	44.3	47.8	50.7	37.2	52.5	53.5
P29	37 York Place Perth	57.1	54.0	29.0	45.2	52.6	39.2	33.9	39.5	41.3	37.2	52.7	50.9
P30 L	104 South St, Perth,	57.8	52.2	46.5	39.5	36.1	43.3	37.4	39.7	39.0	51.3	47.3	48.0
P30 C	104 South St, Perth,	55.3	45.8	45.6	38.4	39.7	41.8	39.1	42.1	41.8	42.9	45.8	49.3
P30 R	104 South St, Perth	55.0	46.9	44.1	41.5	40.8	42.2	36.1	40.0	37.3	41.1	46.5	47.2
P31	45-47 South St, Perth	46.8	38.5	32.1	41.7	40.3	29.2	30.3	33.0	32.0	31.5	40.0	41.6
P32	135 South St, Perth,	49.8	40.7	43.6	47.7	41.4	40.5	40.2	39.4	40.5	41.5	46.9	51.1
P33	216 South Street Perth	52.7	42.2	39.4	43.7	45.8	40.3	39.9	44.9	44.5	43.5	49.8	48.0
P34 L	10 County Place, Perth,	58.8	55.7	47.5	49.8	52.9	49.7	49.4	52.8	52.9	50.9	53.3	56.1
P34 R	10 County Place, Perth,	68.0	57.3	50.7	49.5	58.8	51.8	49.2	55.2	54.5	46.7	49.0	55.1
P35	17 Princes St, Perth	39.4	36.5	30.7	30.3	24.5	27.1	25.7	26.2	29.2	32.6	41.3	41.1
P36	51 Glasgow Rd, Perth	49.6	41.3	33.6	37.6	36.5	32.8	30.1	37.3	38.2	37.6	43.9	46.6
P37	Riggs Rd, Perth, PH1 1PR	46.3	38.6	25.4	28.7	29.8	25.5	26.5	30.2		49.1	34.6	41.6
P38	93-109 Main St Bridgend	39.6	23.9	26.4	41.2	47.1	36.0	36.3	38.1	36.7	24.1	34.9	34.3
P39 L	39 Main St, Bridgend	52.6	51.6	51.2	62.0	76.6	47.8	57.1	60.1	58.5	50.6	51.8	50.1
P39 R	39 Main St, Bridgend	62.1	49.4	45.7	73.4	67.7	57.6	59.1	57.7	57.8	44.5	53.2	52.2
P40 L	18 Main St, Bridgend	54.1	53.6	50.3	50.2	44.5	55.2	43.5	48.2	48.4	53.6	57.3	54.8
P40 R	18 Main St, Bridgend	67.0	54.7	51.3	49.4	45.3	52.3	48.9	48.1	51.1	49.2	56.1	55.8
P41 L	76 Atholl St, Perth	62.3	62.7	49.5	63.3	80.8	56.7	60.6	58.7	55.2	45.0	61.5	63.0

Perth & Kinross Council - Scotland

P41 R	76 Atholl St, Perth	66.2	63.5	48.4	67.8	73.4	55.6	62.4	59.2	59.2	47.0	57.4	57.4
P42	26-28 Atholl St, Perth	59.4	54.3	54.0	56.3	51.8	49.5	48.1	51.7	47.9	45.4	54.3	59.8
P43 L	17 Atholl St, Perth,	64.3	62.4	48.3	54.1	59.1	56.2	52.8	57.7	56.0	58.3	58.7	62.0
P43 C	17 Atholl St, Perth	64.5	63.8	52.6	58.2	60.9	61.5	54.7	59.9	59.1	57.2	60.0	55.1
P43 R	17 Atholl St, Perth	64.4	67.0	55.2	55.3	61.4	60.1	55.8	60.1	59.6	56.2	58.7	61.5
P44 L	22 Barrack St, Perth	51.4	52.3	40.6	51.7		43.1	49.0	49.5	47.6	39.2	54.4	54.4
P44 R	22 Barrack St, Perth	54.3	47.5	40.2	49.5	57.2	49.0	51.0	49.8	61.7	39.2	54.4	57.7
P45	Ballantine Place, Perth	35.9	32.1	21.3	24.3	27.5	18.9	20.8	23.1	24.8	18.7	33.5	35.0
P46	204 A Crieff Rd, Perth	38.1	37.4	19.1	35.1	39.9	31.8	27.7	35.3	36.3	28.5	39.5	42.0
P47	5 East Huntingtower, Perth	33.7	32.3	20.6	25.5	34.0	26.7	25.5	30.2	36.4	23.0	32.2	38.0
P48	30 Edinburgh Rd, Perth,	37.7	30.9	21.3		23.6	22.6	23.8	29.1	30.3	17.4	29.6	39.3
P49	Opp Wood'n Garden, Glencarse	33.5	30.5	14.5	27.4	37.3	24.8	23.3	26.7	27.5	21.5	25.0	29.2
P50	Linden Garden Centre, Glencarse	30.7	31.4	16.6	29.0	32.3	24.3	24.1	26.0	26.7	18.7	25.4	28.9
P51	2 West Bridge St, Bridgend	41.7	36.8	25.5	35.2	29.3	30.2	31.3	28.9	33.0	30.5	38.5	40.2
P54L	176 High St, Perth	43.6	36.4	24.5	25.1	20.3	26.6	24.0	24.9	27.3	27.9	32.6	39.2
P54C	176 High St, Perth	41.8	36.0	30.0	29.0	21.4	27.5	24.3	25.1	27.6	28.9	38.9	37.4
P54R	176 High St, Perth	44.4	30.3	27.8	29.8	18.7	26.7	23.7	26.0	26.2	27.9	39.0	38.7
P55	7 West High St, Crieff	43.9	39.6	38.6	55.3	61.6	48.7	51.0		48.6	40.6	52.2	57.1
P56	39, High St, Crieff	42.4	40.4	27.8	37.7	44.7	35.9	36.8		29.0	34.1	40.6	46.8
P57	, 62, High St, Crieff	37.0	34.6	32.0	41.5	37.4		34.1	37.8	32.3	29.2	39.8	43.0
P58 L	9 East High St, Crieff	50.0	39.9			45.8	41.2	42.6	42.7	42.1	31.4	44.1	47.6
P58R	9 East High St, Crieff	47.1	46.0	32.5		56.2	34.8	39.8	44.7	47.6	32.7	43.3	51.6

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P59	12 Dunkeld Street, Aberfeldy	35.5	33.2	24.2	27.0	32.0	25.0	24.3	31.5	29.0	27.3	28.6	34.0
P60L	Highland Gift Shop, Aberfeldy	26.1	19.1	16.0	19.5	19.4	19.6	19.7	20.1	18.2	18.1	19.7	19.7
P60R	Highland Gift Shop, Aberfeldy	25.9	23.4	16.1	19.2	19.4	21.6	19.4	20.7	17.9	21.6	19.6	20.7
P61L	Atholl St, Perth RTM	69.6	68.8	58.1	47.0	57.4	62.3	25.0	54.1	56.7	57.8	60.5	61.0
P61C	Atholl St, Perth RTM	73.6	67.8	59.2	54.3	54.3	62.9	53.8	61.2	53.2	60.5	61.4	58.3
P61R	Atholl St, Perth RTM	68.5	58.0	52.3	53.6	57.1	64.7	52.1	59.1	61.4	60.8	60.5	55.7
P62	84 Dundee Rd, Perth	47.1	40.9	25.9	43.7	47.4	34.8	39.1	42.6	41.3	29.8	43.3	46.6
P63	30 Dundee Rd, Perth	44.5	47.4	27.9	51.2	59.3	48.0	50.2	52.0	50.6	37.5	48.7	40.7
P64	The Lodge, Isla Rd, Bridgend,	56.8	52.1	45.1	55.7	51.9	57.2	50.5	52.3	58.0	52.5	56.2	54.8
P65	5-7 Charlotte Street, Perth	41.1	34.9	26.1	36.4	45.6		33.8	31.4	35.8	28.2	19.9	38.2
P67	1 Atholl Street, Perth	62.2	49.5	39.2	39.8	33.5	44.5	37.0	34.7	42.7	53.2	42.1	41.9
P68	2 Atholl Street, Perth	49.3	38.3	34.9	28.4	22.0	0.5	65.2	28.5	33.1	27.1	44.4	43.7
P69	CoS, Kinnoull Street, Perth	62.7	57.1	55.3	54.1	28.0	39.3	35.6	33.0	39.2	43.9	60.7	54.1
P70	28 Dunkeld Rd, Perth	47.8	38.9	29.2	34.8	31.1	28.3	29.3	27.2	31.5	31.0	42.6	46.9
P71	134-140 Dunkeld Road, Perth	28.6	25.8	12.6	16.1	19.0	13.7	15.4	17.7	17.6	13.7	24.3	29.4
P72	82 Crieff Road, Perth	50.5	45.6	38.0	38.5	36.8	38.6	37.7	37.6	44.5	39.6	48.3	47.0

Appendix C: Pollution Prevention & Control Public Register

Licence Number	Site Name	Registration Category	Licence Date
E/0020049	W B Grieve Groundworks	Part A	07/08/2003
E/0020056	Binn Farm Landfill Site, Glenfarg	Part A	29/11/2005
E/0020061	Errol Brick Works, Perth	Part A	08/12/2004
E/0020065	Grampian Country Foods, Coupar Angus	Part A	06/10/2005
E/0020066	Vector Aerospace Component Services, Perth	Part A	17/03/2005
E/0020067	Inveralmond Meat Factory, Perth	Part A	08/12/2005
A/1004887	TEG Environmental Ltd, Glenfarg	Part A	
A/1016729	Nether Pittendreich Broiler Farm , Perth	Part A	28/06/2007
A/1016753	Carsie Broiler Farm, Blairgowrie	Part A	28/06/2007
A/1016780	Balado Poultry Farm, Kinross	Part A	30/08/2007
A/1016781	Bendochy Poultry Farm, Coupar Angus	Part A	30/08/2007
A/1016783	Mawmill Poultry Farm, Kinross	Part A	27/09/2007
A/1017042	Easter Bonhard Poultry Farm, Perth	Part A	31/05/2007
A/1017044	Ladyston Poultry Farm, Auchterarder	Part A	11/06/2007
A/1017515	Craiglaw Poultry Farm, Kinross	Part A	28/06/2007
A/1017516	Cardo Poultry Farm, Kinross	Part A	28/06/2007

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Licence Number	Site Name	Registration Category	Licence Date
Licence Number	Site Name	Registration Category	Licence Date
A/1017931	Mains Innerpeffray & Neuk Farm,Crieff	Part A	26/07/2007
B/1000080	Grosvenor Grain & Feed, Perth	Part B	03/11/2005
B/1000170	Elder& Paton, Perth	Part B	22/04/2005
B/1003134	Perth Crematorium	Part B	10/02/2006
B/1003224	CEMEX UK Materials Ltd, Perth	Part B	11/04/2006
B/1003259	R Crichton, Blair Atholl Garage, Pitlochry	Part B	06/04/2006
B/1004274	Birnam Autopoint Lt, Perth	Part B	06/04/2006
B/1004296	Barhaul 2003 Ltd	Part B	07/06/2006
B/1004297	Hanson Quarry Products, Perth	Part B	11/05/2006
B/1004298	Tarmac, Friarton, Perth	Part B	05/07/2006
B/1004313	Marlee Quarry, Blairgowrie	Part B	19/01/2006
B/1004343	Collace Quarry, Kinross	Part B	31/08/2006
B/1004392	Ennstone Thistle, Shierglas Quarry, Pitlochry	Part B	07/11/2006
B/1004400	Tay Racers, Balbeggie	Part B	31/08/2006
B/1004467	Clive Bridges, Ballinluig Services, Pitlochry	Part B	31/08/2006
B/1004476	288 Strathtay Road, Perth	Part B	20/12/2006
B/1004477	Perth Services	Part B	01/12/2006
B/1004506	Tesco Stores Ltd, Welton Rd, Blairgowrie	Part B	06/04/2006
B/1004855	BP Express Shopping Ltd, Invergowrie	Part B	08/12/2006
B/1004880	27 Perth Street	Part B	01/12/2006
B/1004881	Kenneth Melville (Errol) Ltd.	Part B	24/11/2006

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Licence Number	Site Name	Registration Category	Licence Date
B/1004882	Strathtay Services Station	Part B	24/11/2006
Licence Number	Site Name	Registration Category	Licence Date
B/1004885	Asda Stores Ltd, Dunkeld Road, Perth	Part B	24/11/2006
B/1004886	Girvans of Aberfeldy, Dunkeld Street, Aberfeldy	Part B	24/11/2006
B/1008966	BP Express Shopping Ltd, Perth	Part B	15/12/2006
B/1008969	Glenalmond Timber Co Ltd, Methven	Part B	09/02/2007
B/1008970	South Inch Filling Station	Part B	15/12/2006
B/1008971	Crieff Garage	Part B	15/12/2006
B/10008995	wM Morrison Supermarket, Perth	Part B	01/12/2006
B/1008996	Pitlochry Service Station	Part B	15/12/2006
B/1009002	Union Street	Part B	24/11/2006
B/1009466	Loaninghead Service station, Gleneagles	Part B	14/12/2006
B/1009470	Kinross Service Station	Part B	11/12/2006
B/1010936	Tesco Stores Ltd, Crieff Road, Perth	Part B	15/12/2006
B/1010937	Auchterarder Motors, Auchterarder	Part B	20/12/2006
B/1012310	Scotland Gas Network, Cleish Site, Perth	Part B	24/08/2006
B/1012905	Johnsons, Perth	Part B	27/11/2006
B/1014595	Wm Morrison, Perth	Part B	27/11/2006
B/1015088	Almondbank Service Station, Crieff Road Perth	Part B	20/12/2006
B/1015119	Blairs Laundry, Rattray	Part B	18/01/2007

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Licence Number	Site Name	Registration Category	Licence Date
B/1015283	Pitlochry Fabric Care	Part B	18/01/2007
B/1015421	Spa Clean, Crieff	Part B	18/01/2007
B/1015675	Fair City Laundry, Perth	Part B	18/01/2007
Licence Number	Site Name	Registration Category	Licence Date
B/1016155	Blairs Laundry, Blairgowrie	Part B	05/04/2007
B/1020963	Balboughty Farm, Scone	Part B	30/11/2007
B/1024253	Andrews of Perth, Glasgow Road	Part B	11/03/2008
B/1027643	Mobile Crusher	Part B	24/06/2008
E/0030001	Esso Petroleum Company Ltd, Broxden	Part B	29/03/2003
E/0030075	Scotland Gas Network	Part B	17/02/2004
E/0030094	Holden Environment Ltd	Part B	25/11/2003
E/0030095	Alan Dougan	Part B	29/04/2004
E/0030106	Cameron Motors (Perth) Ltd	Part B	05/08/2004
E/0030112	Calport Ltd, The Harbour, Perth	Part B	29/07/2004
E/0030179	I&H Brown Ltd, Dunkeld Road, Perth	Part B	10/02/2005